Under Pressure

Strategies for Sodium Reduction in Institutionalized Environments

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention

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Sodium and Health

Hypertension is the single largest risk factor for cardiovascular disease (CVD) mortality, accounting for 45% of all CVD deaths.[1] Treating heart disease, stroke, and other CVD accounts for 1 of 6 U.S. health dollars spent ($273 billion in 2008). A strong body of evidence has found that as sodium intake increases, so does blood pressure, leading to an increased risk for heart disease and stroke, both leading causes of death in the United States. Blood pressure tends to increase with age; middle-aged and older men and women have a 90% lifetime risk of developing hypertension.

The *2010 Dietary Guidelines for Americans* recommend consuming no more than 2,300 milligrams (mg) of sodium per day in general, and 1,500 mg per day for people aged 51 years or older and those of any age who are African American or who have hypertension, diabetes, or chronic kidney disease. However, average U.S. intake far exceeds these recommendations.

The Institutionalized Environment

People in institutional settings, such as a correctional facility or nursing home, are significantly affected by the food choices made available to them. Considering that typically there are no other food options, these populations are dependent on the quality and healthfulness of the food provided to them. More often than not, the available food is high in sodium and does not follow the *2010 Dietary Guidelines for Americans*.

According to the U.S. Census, the term *institutionalized populations* refers to people under formally authorized supervised care or custody in institutions. These populations are considered patients or inmates of an institution, regardless of the availability of nursing or medical care, length of stay, or number of people in the facility. Institutionalized populations generally have limited interaction with the surrounding community, are under the care of trained staff, and are unable or unlikely to participate in the labor force while they are residents. These populations include correctional facilities (federal detention centers, federal and state prisons, jails, correctional residential facilities, and community-based facilities), nursing homes (long-term acute care regardless of age), and other facilities (mental and psychiatric hospitals, in-patient hospice, residential schools for people with disabilities, halfway houses, and juvenile training schools).[2] The U.S. Census estimates that nearly 4 million people were institutionalized in 2010. Of these, 2.2 million were in correctional facilities, 1.5 million were in nursing or skilled nursing facilities, and 151,000 were in juvenile facilities. Additionally, 76,000 people were in "other" institutionalized facilities.[3]

Although not considered institutionalized populations, this guide also will address strategies for congregate and home-delivered meal settings because these services

are primary meal provisions for older populations. Provisions in the Older Americans Act authorize both congregate and home-delivered nutrition services. Congregate meal services are available for individuals aged 60 years or older. In fiscal year 2010, 96.4 million meals were provided to more than 1.7 million older individuals in a variety of community settings. Home-delivered nutrition services are available to individuals who are aged 60 years or older and homebound. In fiscal year 2010, 145.4 million home-delivered meals were provided to nearly 870,000 individuals.[4]

Health Status of Institutionalized Populations

Limited data are available on the health status of institutionalized individuals because these populations are excluded from most national health surveys.

Correctional Facilities

While inmates are incarcerated, the state incurs the cost of health care. In 2004, health care costs for correctional facilities alone totaled $3.7 billion and accounted for 10% of all state corrections costs.[5] Furthermore, an estimated 18% of the U.S. inmate population in 1998 had hypertension.[5] Not only is there a daily cost incurred for treating high blood pressure and other chronic conditions, but there also is a cost to communities when untreated inmates exit the prison system and return to society. A report presented to Congress on the health of inmates returning to communities suggested that, by addressing prevention, screening, and treatment services in prison, states are assisting communities by ensuring improved public health and fewer health problems related to inmates being released.[5]

Nursing Facilities

In 2000, 87% of older Americans had diabetes, hypertension, dyslipidemia, or a combination of these chronic diseases.[6] These conditions all have adverse outcomes that can be improved or reduced with appropriate nutrition interventions.

The Impact of the Food Environment on Institutionalized Populations

Correctional Facilities

Currently, the Federal Bureau of Prisons does not require nutrition standards for food and meals served to inmates. Prior to implementing new menus, a nutritional analysis is conducted by a registered dietitian to ensure menus "consider" dietary reference intake (DRI) recommendations set by the Institute of Medicine. Although the National Commission on Correctional Health Care recommends that all inmates receive a heart-healthy diet, this policy is not a requirement for accreditation.

Little is known about the sodium content of inmate meals. In 1989, the most recent year of available data, institutions with male inmates managed by the Bureau of Prisons were serving a daily diet that included 5,400 calories, 847 mg of cholesterol, and 10,000 mg of sodium. The goal for 1995

Case Example:

The Texas Department of Criminal Justice partners with the agency's horticulture training classes to grow and use fresh herbs in correctional settings. A booklet indicating different kinds of herbs and how they could be used was developed and distributed to units along with seeds. Each unit has a small area inside the compound where inmates can tend the garden. After harvesting, the herbs are sent to the kitchens, where they are used immediately, dried, or frozen. The Department launched a contest in which inmates kept an herb journal, including pictures, progress, yield, and any other pertinent information.

was a daily diet with 3,367 calories, 433 mg of cholesterol, and 6,520 mg of sodium.[7] Although this goal reflects a reduction of 3,480 mg, even that is still well above the tolerable upper intake level for sodium of no more than 2,300 mg per day.

▶ *Nursing Facilities*

Poor nutrition is a major problem for older Americans.[8] The Code of Federal Regulations requires that nursing facilities that participate in Medicare provide meals in accordance with the DRI set by IOM. For males and females aged 51–70 years, this recommendation for adequate intake is 1,300 mg of sodium per day. For males and females aged 71 years or older, the recommendation is 1,200 mg per day.

In 2004, the majority of nursing home residents were 65 years of age or older.[9] The vast majority of older Americans have chronic conditions for which nutrition interventions have been effective in improving health and quality-of-life outcomes.[5]

▶ *Congregate Populations and Home-Delivered Meals*

The average congregate meal program participant is 76 years old; the average home-delivered participant is age 78. The Older Americans Act requires that meals served in congregate settings comply with the most recent *Dietary Guidelines for Americans* and :

- Provide a minimum of 33.3% of the DRI allowances established by IOM if the project provides one meal per day.
- Provide a minimum of 66.6% of the DRI allowances if the project provides two meals per day.
- Provide 100% of the DRI allowances if the project provides three meals per day.

An evaluation report by the Administration on Aging (AoA) found that the average intake of sodium over 24 hours in the congregate and home-delivered meal setting was 2,568 mg and 2,352 mg per day, respectively.[10] However, AoA found that each congregate and home-delivered program meal contained about 1,400 mg of sodium.[11] This could indicate that meal recipients are not consuming all of their meals from the congregate or home-delivered meal program. The evaluation found that only 43% of congregate meal program participants reported the meal program was a major source of their food, and 56% reported it was one of several food sources.

High sodium exposure in institutional, congregate, and home-delivered meal settings increases the risk of high blood pressure, heart disease, and stroke. These environments also serve as places of employment and can affect the health of employees, so improvements to the healthfulness of food made available within these settings can positively benefit the employees who work there. A range of strategies to support sodium reduction in institutionalized, congregate, and home-delivered meal populations follow.

Strategies to Improve the Food Environment in Institutionalized Settings

▶ *Establish a Comprehensive Food Policy*

Recently, the American Medical Association's Council on Science and Public Health released *Dietary Intake of Incarcerated Populations*, a report urging the National Commission on Correctional Health Care, the American Correctional Association, and individual states to mandate adherence to the current DRI and *Dietary Guidelines for Americans* as a criterion for accreditation or standards compliance, until national dietary guidelines for incarcerated populations become available.[12]

Correctional facilities and nursing homes typically buy food in bulk from large distributors. Much of this food is packaged and precooked, meaning it can be a substantial source of sodium. Through responsible food purchasing decisions, these facilities can promote better nutrition by providing healthful and appealing food choices for inmates, patients, and others who consume meals.

A comprehensive food policy should have clearly defined goals and establish purchasing requirements, including nutrient standards for foods purchased and served. This could include food sold to inmates, patients, visitors, employees, and community members through the cafeteria, vending machines, café carts, donations from faith-based organizations, gift shops, and commissaries. When drafting a comprehensive food policy, consider:

- Conducting an environmental scan of foods and beverages currently served within your agency or organization.
- Including language supporting locally grown agriculture, such as allowing local farmers' markets to operate within your facilities.
- Ensuring everyone is offered a heart-healthy meal alternative if none is currently offered.
- Including purchasing requirements (via nutrition standards) as a component to accept or reject a bid for food service.
- Participating in a Group Purchasing Organization to reduce costs and increase demand for lower sodium foods through larger purchasing power.
- Defining a uniform definition of "healthy" to incorporate into the national menu or standard menus.
- Requiring distributors to meet defined nutrient standards, including low sodium.
- Requiring distributors to use electronic distributor catalogues tailored to screen out products that exceed a certain level of sodium.
- Using electronic distributor catalogues to search for desired criteria, such as "locally sourced" or "trans fat-free."
- Establishing a garden to grow food to eat or sell.
- Partnering with a Community Supported Agriculture (CSA) group that subsidizes CSA purchases by employees.

Case Example:

The Valicoff Fruit Company improved access to fresh produce for elderly citizens by introducing delivery of three-pound bags of fresh fruit to retirement communities in Seattle, Washington.

Food Procurement Requirements—Outlining Nutrient Standards

Defining nutrient standards for foods and beverages increases access to healthful food by requiring minimum nutritional standards for foods and beverages that are sold. Limits for certain nutrients, such as sodium, may be required for meals and snacks served. Nutrition standards may include:

- Limiting certain nutrients, including sodium, for all foods and beverages served in cafeterias, café carts, vending machines, gift shops, and commissaries.
- Establishing a fast food-free zone by disallowing outside food to enter your facility.
- Increasing the availability of locally sourced or organic foods.

Case Example:

The Indiana Department of Correction (IDOC) and ARAMARK Correctional Services, the IDOC's food-service provider, worked together to create a new menu with 20% less sodium, more servings of fruit in place of baked desserts, no fried foods, and fewer high-fat menu items. The revised menu has been implemented in all 28 facilities statewide.

▶ *Use Marketing Techniques to Promote Healthful Foods*

Lower sodium and more nutritious foods may be promoted with savory descriptors on menu boards, serving lines, and other areas where food is sold. Advertising for unhealthful foods may be restricted as well. Successful marketing also creates opportunities for vendors to be highlighted in media coverage that can resonate with the local community. Strategies may include:

- Labeling foods to identify those considered healthy.
- Applying a warning symbol to meals and snacks with excessive amounts of sodium.
- Using creative signage and descriptors to highlight nutrient-rich, lower sodium food choices.
- Designing stickers highlighting the amount of calories in each serving size offered for beverages and placing them under the name of the beverage on the soda machines in the cafeteria.
- Highlighting locally sourced cafeteria food by providing information about the farmer.
- Distributing information regarding farmers at the point of purchase along with additional nutritional information.
- Developing and marketing a data source where potential patients and their families can find information about food offerings.
- Developing recognition programs for staff adopting healthful eating habits.
- Soliciting involvement of staff, patients, and inmates by asking for volunteers to help design artwork for walls depicting healthy food options.
- Asking inmates and patients to provide input on new menu options by conducting taste tests.
- Implementing and promoting pricing strategies to encourage purchasing healthful foods in the commissary.

Case Example:

Schenectady County Public Health Services, in collaboration with Cornell Cooperative Extension, is working to reduce sodium content in home-delivered meals and meals served at congregate meal sites in New York. Recipe modifications included eliminating added salt and creating sauces from scratch. Product substitutions included adding sodium-free soup bases to soups and using no salt added and low sodium varieties of canned vegetables. The goal is to reduce the sodium content of meals served through home-delivered and senior congregate meal programs by 30% over 3 years. In the first year of the program, sodium was reduced by 10%.

Provide Education

Providing education about the importance of healthful eating and reducing sodium may affect habits after incarcerated individuals return to their communities. It also can benefit families of nursing home patients as well as congregate and home-delivered meal recipients. The AoA evaluation mentioned above found that of the 68% of congregate meal participants who reported receiving nutrition education, the majority reported that it was very or somewhat useful in helping them improve their eating habits. Most of the home-delivered meal recipients who remembered receiving nutrition education also reported that the information was very or somewhat useful.[11] Education may be incorporated through:

- Providing nutrition and sodium education during new inmate or patient orientations.
- Providing nutrition information in and around food-service settings (i.e., table tents, signage, menu labeling, murals, brochures, etc.).
- Preparing educational materials for patients' families regarding the impact of sodium on blood pressure and major sources of sodium.
- Incorporating nutrition information, including the importance of sodium reduction, into newsletters and other publications.

- Implementing an education campaign to promote the healthful food environment to staff and visitors.
- Offering professional development training for food-service staff on lower sodium and from-scratch cooking techniques.
- Requiring the inclusion of nutrition and sodium education with inpatient education and as a part of discharge planning.
- Offering nutritional counseling by a registered dietitian for patients, inmates, and staff with chronic diseases, such as hypertension, diabetes, and overweight or obesity.

Conclusion

Whether in correctional facilities, nursing homes, or recipients of congregate or home-delivered meals, people in institutionalized settings are significantly affected by the food choices made available to them. Improving the quality and healthfulness of the food provided in these settings can enhance overall wellness and model healthful eating practices. The opportunity to reduce sodium and improve the food environment in these settings is not limited to the examples listed in this guide. Please see the following page for more related resources.

Resources

Administration on Aging
www.aoa.gov

American Correctional Association
http://aca.org

CDC Public Health Practice Stories From the Field:
Schenectady County Program Lowers Sodium in Menu Items for Seniors
www.cdc.gov/stltpublichealth/phpracticestories/pdfs/PHPSFF_Schenectady_v2.pdf

Under Pressure: Strategies for Sodium Reduction in Worksites
www.cdc.gov/salt/pdfs/Sodium_Reduction_Worksites.pdf

References

1. Institute of Medicine. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension*. Washington, DC: National Academies Press; 2010. Available at www.iom.edu/Reports/2010/A-Population-Based-Policy-and-Systems-Change-Approach-to-Prevent-and-Control-Hypertension.aspx.
2. U.S. Census Bureau. 2010 Census Summary File 1. 2010 Census of Population and Housing, Technical Documentation. March 2012. Available at www.census.gov/prod/cen2010/doc/sf1.pdf.
3. U.S. Census Bureau. 2010 Census Summary File 1. 2010 Census, Group Quarters Population in Institutional Facilities by Sex and Age. March 2012. Available at http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_SF1_PCO2&prodType=table.
4. Administration on Aging. Nutrition Services (OAA Title IIIC). Available at www.aoa.gov/AoARoot/AoA_Programs/HCLTC/Nutrition_Services/index.aspx.
5. Kinsella C. *Trends Alert: Corrections Health Care Costs*. Lexington, KY: Council on State Governments; 2004. Available at www.prisonpolicy.org/scans/csg/Corrections+Health+Care+Costs+1-21-04.pdf.
6. National Center for Health Statistics. *Third National Health and Nutrition Examination Survey* (Series 11, No 1). Washington, DC: U.S. Government Printing Office; 1997.
7. U.S. Department of Justice. Appendix I: Status of the Management Control Report Corrective Actions. 1993. Available at www.justice.gov/oig/reports/BOP/e9701/i9701app.htm.
8. Institute of Medicine, Food and Nutrition Board, Committee on Nutrition Services for Medicare Beneficiaries. *The Role of Nutrition in Maintaining Health in the Nation's Elderly: Evaluating Coverage of Nutrition Services for the Medicare Population*. Washington, DC: National Academies Press; 2000.
9. Jones AL, Dwyer LL, Bercovitz AR, Strahan GW. The National Nursing Home Survey: 2004 overview. *Vital Health Stat*. 2009;13(167). Available at www.cdc.gov/nchs/data/series/sr_13/sr13_167.pdf.
10. Administration on Aging. Nutrition Evaluations Report (Vol 1). II: Characteristics of Title III Nutrition Program Participants. A: Characteristics of Participants. July 2009. Available at www.aoa.gov/AoARoot/Program_Results/Nutrition_Report/er_vol1ch2a1.aspx.
11. Administration on Aging. Nutrition Evaluations Report (Vol 1). IV: Title III Program Administration and Service Delivery. F: Quality of Program Services Provided (Part 1). July 2009. Available at www.aoa.gov/AoARoot/Program_Results/Nutrition_Report/er_vol1ch4f1.aspx.
12. Council on Science and Public Health. *Dietary Intake of Incarcerated Populations: Executive Summary* (Resolution 420-A-10). Available at www.ama-assn.org/resources/doc/csaph/a11csaph4-summary.pdf.

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov
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